Hot Air Balloon

- 1. State the role each of the following played in the development of flying balloons.
 - **a.** Joseph Michel Montgolfier and Jacques-Etienne Montgolfier.
 - **b.** Jean François Pilatre de Rozier and François Laurent Marquis d'Arlandes.
 - **c.** Jacques Alexandre Cesar Charles and Nicolas Louis Robert.
 - **d.** Ben L. Abruzzo, Maxie L. Anderson, and Larry Newman
 - e. Bertrand Piccard and Brian Jones
- 2. Cite the principle of Archimedes, and briefly describe how it applies to each of the following:
 - **a.** A piece of cork floating in a bowl of water.
 - **b.** A ship floating in the ocean
 - **c.** A hot air balloon floating in the atmosphere
- **3.** Using a textbook of Chemistry, or a reference book of scientific tables, draw up a simple table showing the composition of air by weight and by volume.
- **4.** Draw up a simple table showing a comparison of the atomic number, atomic weight, and density of hydrogen, helium, nitrogen, and oxygen.
- 5. Name two gases that are used in flying gas filled balloons.
- **6.** Explain how heat/temperature affect the density of air, and how this applies to flying hot air balloons.
- 7. Explain the role of each of the following in the structure and flying of a hot air balloon.
 - a. Envelope
 - **b.** Support structure
 - **c.** Throat
 - **d.** Fuel source
- **8.** Name two materials that may be used for the envelope of a hot air balloon, and compare the advantages each cords because of its properties.
- 9. Describe how flying balloons have served a useful function in
 - **a.** Military campaigns
 - **b.** Scientific research
- **10.** At what time of the day do most sport balloon flights take place? Why?
- 11. Describe how a pilot controls the vertical movement of
 - **a.** A hot air balloon
 - **b.** A gas filled balloon
- **12.** Describe how a pilot controls the lateral or horizontal movement of a flying balloon.
- 13. Build to completion one model hot air balloon (or two if working in pairs).
- **14.** Successfully launch, fly, and recover the model hot air balloon(s) which you have built.

Skill Level I

Recreation North American Division 2008 Update

